

09841777.044403

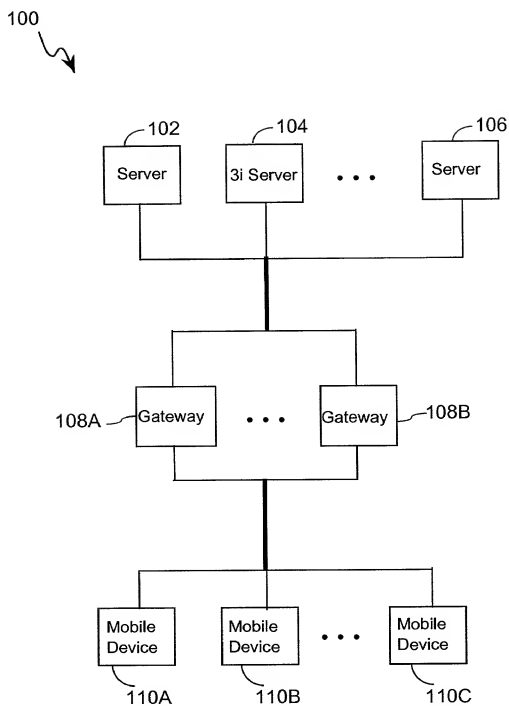


FIG. 1

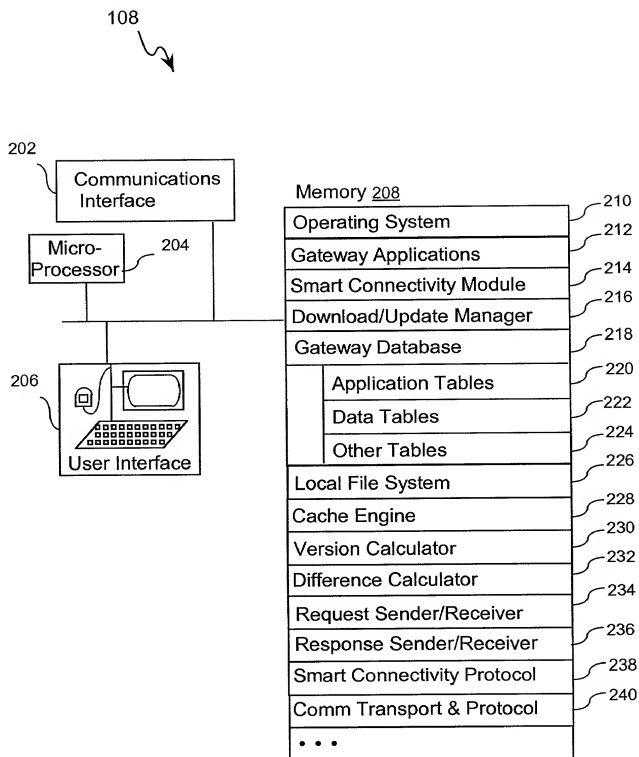


FIG. 2

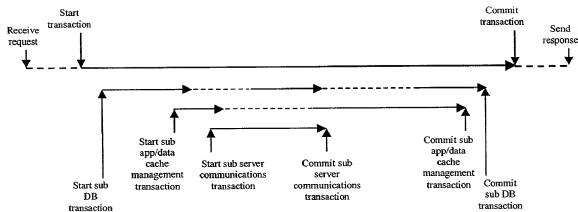


FIG. 3

Application Identification Table

Column	Data Type	Length	Description
appURL	String of unicode characters	Variable length	Application URL., comprising protocol name, host address, path, and application name. Example: http://www.mysite.com/asp/myapp .
appId	Unsigned integer	4 bytes	Unique identifier for the corresponding application URL.

FIG. 4

Data Identification Table

Column	Data Type	Length	Description
dataURL	String of unicode characters	Variable length	Data URL., comprising protocol name, host address, path, and data file name or a database query. Example: http://www.mysite.com/data/mydata .
dataID	Unsigned integer	4 bytes	Unique identifier for the corresponding data URL.

FIG. 5

Subscriber Registration Table

Column	Data Type	Length	Description
subID	String of unicode characters	Variable length	Subscriber identifier.
subName	String of unicode characters	Variable length	Subscriber name.
password	String	Variable length	User password.
birthDate	Date	7 bytes	User birth date
flagSet	unsigned integer	1 byte	Flag: <ul style="list-style-type: none"> The 1st bit to 7th bit are reserved; If the 6th bit is on, the subscriber is disabled for the service.

FIG. 6

Application Registration Table

Column	Data Type	Length	Description
appID	Unsigned integer	4 bytes	App URL, comprising protocol name, host address, path, and app name. Example: http://www.mysite.com/asp/app/myapp .
appVer	Byte array	16 bytes	Application version. It will be automatically filled in by the gateway.
flagSet	Unsigned integer	1 byte	Flag: <ul style="list-style-type: none"> • If the 1st bit is on, the corresponding application is permitted for caching; • The 2nd bit to 7th bit are reserved; • If the 8th bit is on, the corresponding application is disabled from user access.
domName	String	Variable length	The domain name of the corresponding application URL.
procolType	String	Variable length	The protocol type of the corresponding application URL.
virtualPath	String	Variable length	The virtual path of the corresponding application URL.
portNo	Unsigned integer	2 bytes	The port number of the corresponding application URL. 0 indicates using the standard port number for the corresponding protocol type.

FIG. 7

Compression Methods Table

Column	Data Type	Length	Description
compName	String	Variable length	Data compression method name.
compID	Unsigned integer	1 byte	Unique identifier for the corresponding data compression method ID.

FIG. 8

Compatible (3i) Server Registration Table

Column	Data Type	Length	Description
domName	String	Variable length	Compatible server domain name.
owner	String	Variable length	Owner of the corresponding compatible server.
patchVer	Byte array	3 bytes	The server patch version installed on the corresponding compatible server. It is encoded as follows: <ul style="list-style-type: none"> • The 1st byte indicates the major version; • The 2nd byte indicates the minor version; • The 3rd byte indicates the revision number.

FIG. 9

Session Management Table

Column	Data Type	Length	Description
sessionID	Unsigned integer	4 bytes	Session identifier.
subID	String	Variable length	The identifier of the subscriber who caused to create the corresponding session.
procolVer	Byte array	3 bytes	The protocol version used in the corresponding session. It is encoded as follows: <ul style="list-style-type: none"> • The 1st byte indicates the major version; • The 2nd byte indicates the minor version; • The 3rd byte indicates the revision number.
compID	Unsigned integer	1 byte	The identifier of the data compression method used in the corresponding session.
optionProp	Binary stream	Variable length	Optional properties of the corresponding session. It is encoded as follows: <ul style="list-style-type: none"> • The 1st byte is a flag to indicate which optional properties are defined; • All the following bytes are the values of defined properties;
timeStamp	Unsigned integer	4 bytes	The starting time stamp of the corresponding session.
TTL	Unsigned integer	4 bytes	The designated session lifetime in second.

FIG. 10

Application Download/Update Histories Table

Column	Data Type	Length	Description
applD	Unsigned integer	4 bytes	Application identifier.
appSize	Unsigned integer	4 bytes	Size in byte of the corresponding application.
nDownload	Unsigned integer	4 bytes	Number of downloads of the corresponding application by all local mobile devices.
nUpdate	Unsigned integer	4 bytes	Number of updates on the corresponding application by all local mobile devices.
updateRate	Unsigned integer	1 byte	Average update rate (1-100 in percentage) for the <i>nUpdate</i> updates on the corresponding application by all local mobile devices.
timeStamp	Unsigned integer	4 bytes	The time stamp of the last download of or update on the corresponding application by a mobile devices, based on the corresponding gateway's local clock.

FIG. 11

Data Download/Update Histories Table

Column	Data Type	Length	Description
dataID	Unsigned integer	4 bytes	Data identifier.
dataSize	Unsigned integer	4 bytes	Size in byte of corresponding data.
nDownload	Unsigned integer	4 bytes	Number of data downloads of the corresponding data by all local mobile devices.
nUpdate	Unsigned integer	4 bytes	Number of updates on the corresponding data by all the local mobile devices.
updateRate	Unsigned integer	1 byte	Average update rate (1-100 in percentage) for the <i>nUpdate</i> updates on the corresponding data by all the local mobile devices.
timeStamp	Unsigned integer	4 bytes	The time stamp of the last download of or update on the corresponding data by a mobile device, based on the corresponding gateway's local clock.

FIG. 12

Application Storage Table

Column	Data Type	Length	Description
applD	Unsigned integer	2 bytes	Application identifier associated with the corresponding application URL.
nFile	unsigned integer	1 byte	Number of files included in the corresponding application.
fNames	Array of strings of unicode characters	Variable length	Array of the names of all files included in the corresponding application.
appVer	Byte array	16 bytes	Application version. It will be filled in by the gateway.
fVers	Array of byte array	Variable length	Array of the version information of all files included in the corresponding application.
root	String of unicode characters	Variable length	Root directory in the local storage where the corresponding application is cached.
nextRel	Unsigned interger	4 bytes	Next release time of the corresponding application, based on the corresponding origin application server's local clock.
lang	Unsigned integer	1 byte	Code, indicating the type of computer language used to write the corresponding application.
flagSet	Unsigned integer	1 byte	Flag: <ul style="list-style-type: none"> The 1st bit to 7th bit are reserved; If the 8th bit is on, the corresponding application is out-of-date.
nUpdate	Unsigned integer	2 byte	Number of updates on the corresponding application by the corresponding gateway since the application has been cached.
updateRate	Unsigned integer	1 byte	Average update rate (1-100 in percentage) for the <i>nUpdate</i> updates on the corresponding application by the corresponding gateway.
CBI	Unsigned integer	4 bytes	Cache Benefit Index.
updateIntvl	Unsigned integer	4 bytes	The guessed application update interval.

FIG. 13

Data Storage Table

Column	Data Type	Length	Description
dataID	Unsigned integer	2 bytes	Data Identifier of the corresponding data URL.
root	String of unicode characters	Variable length	Root directory in the local storage where the corresponding data is stored.
flagSet	Unsigned integer	1 byte	Flag: <ul style="list-style-type: none"> • If the 1st bit is on, the corresponding application is updated by at least one 3i mobile terminal. • The 2nd bit to 7th bit are reserved; • If the 8th bit is on, the corresponding application is out-of-date.
DataVer	Byte array	16 bytes	Version information of the corresponding execution of data.
nUpdate	Unsigned integer	2 byte	Number of updates on the corresponding data.
updateRt	Unsigned integer	1 byte	Average update rate (1-100 in percentage) for the <i>nUpdate</i> updates on the corresponding data.
CBI	unsigned integer	4 bytes	Cache Benefit Index.
updateIntvl	Unsigned integer	4 bytes	The guessed data update interval.

FIG. 14

Mobile Application cache table

Column	Data Type	Length	Description
subID	String	Variable length	Subscriber identifier.
appID	Unsigned integer	4 bytes	The identifier of the application cached on the corresponding mobile device.
appVer	Byte array	16 bytes	The latest version of the application cached on the corresponding mobile device.

FIG. 15

Mobile Application Use Table

Column	Data Type	Length	Description
subID	String	Variable length	Subscriber identifier.
applID	Unsigned integer	4 bytes	The identifier of the application executed by the corresponding subscriber.
timeStamp	Unsigned integer	4 bytes	The time stamp of the corresponding execution of the corresponding application by the corresponding subscriber.
peCBI	Unsigned integer	4 bytes	Per-execution CBI, i.e., the number of bytes saved from wireless communications by caching the corresponding application on the corresponding mobile terminal.

FIG. 16

Broadcast Table

Column	Data Type	Length	Description
subID	String	Variable length	Subscriber identifier
applID	Unsigned integer	4 bytes	The identifier of the application on which the corresponding broadcast message was received by the corresponding gateway.
appVer	Byte array	16 bytes	The version information of the broadcast application.

FIG. 17

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Configuration Table

Column Name	Data Type	Length	Description
	String of Unicode characters	Variable length	<p>Parameter name.</p> <p>MAX_APP_CACHE_SIZE: The maximum memory size in byte for the intelligent application caching.</p> <p>MAX_DAT_CACHE_SIZE: The maximum memory size in byte for the intelligent data caching.</p> <p>FREE_APP_MEM_SIZE: The memory size in byte that is free for application caching. It is MAX_APP_CACHE_SIZE initially.</p> <p>FREE_DATA_MEM_SIZE: The memory size in byte that is free for data caching. It is MAX_DATA_CACHE_SIZE initially.</p> <p>EFFECT_PERIOD: The amount of time application and data records can be stored in the gateway DB since the last execution of or access on the corresponding applications or data.</p> <p>MAX_DB_CONNECTIONS: The maximum number of DB connections.</p> <p>MAX_COMM_CONNECTIONS: The maximum number of wireless communications connections.</p> <p>UPDATE_TM_PERCENT: The percentage of the actual application or data update interval against the guessed update interval of the corresponding application or data.</p> <p>UPDATE_TM_WEIGHT: The weight of the last actual application or data update interval against the previous guessed update interval of the corresponding application or data.</p> <p>SCHE_RETRY_TM: The retry interval after an application update schedule expires and before its update is actually confirmed.</p> <p>USER_EVENT_PRIO: The priority of a gateway-to-server request driven by a user event.</p> <p>BRD_SCHE_PRIO: The priority of a gateway-to-server request caused by application update schedule expiration or a server-to-gateway broadcast message.</p> <p>GUESSED_UPDATE_PRIO: The priority of a gateway-to-server request caused by estimated application or data update interval.</p> <p>PASSWD_RETRY_NO: The permitted number of retries of for a password matching failure.</p> <p>MAX_IGNORE_NO: The maximum continuous ignorance number on applications.</p> <p>APP_CACHE_ROOT: The top-level directory where applications can be cached.</p> <p>DATA_CACHE_ROOT: The top-level directory where data can be cached.</p> <p>SESSION_TTL: The time-to-live of a newly created logical session, during which, the session may be reused.</p> <p>LAST_SESSION_ID: The last assigned wireless communication session identifier. It will be 0 initially.</p> <p>VERSION_TTL: The time-to-live of the difference files associated to the oldest version of an application cached in the gateway.</p> <p>LAST_APP_ID: The last assigned application identifier. It will be 0 initially.</p> <p>LAST_DATA_ID: The last assigned data identifier. It will be 0 initially.</p> <p>LAST_APP_KEY_ID: The last assigned application-key pair identifier. It will be 0 initially.</p> <p>DEFAULT_CHECK_TM: The initial (default) amount of time allowed between two application or data status check requests.</p> <p>W_COMM_TIMEOUT: The timeout time for a wireless communication message.</p> <p>I_COMM_TIMEOUT: The timeout time for an Internet communication message.</p> <p>W_COMM_RETRY_NO: The permitted number of retries for a wireless communication failure.</p> <p>I_COMM_RETRY_NO: The permitted number of retries for an Internet communication failure.</p>
Value	String of unicode characters	Variable length	Parameter value. It needs to be reinterpreted for different parameter names.

FIG. 18

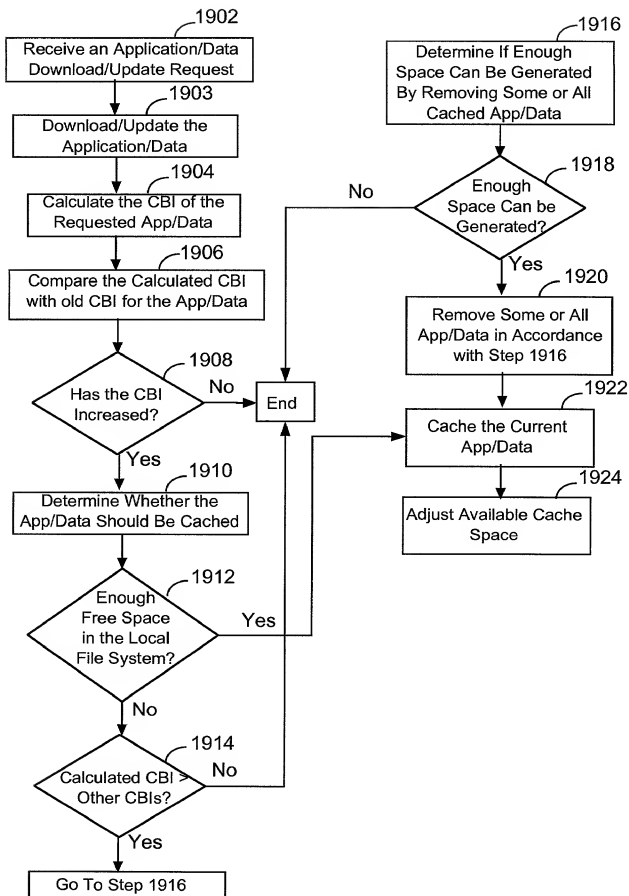


FIG. 19

Request Type	Remarks
Open session	Open a logical session.
Reuse session	Reuse a previously created logical session.
Application Download	Download an application.
Application Update	Update an application that is cached on the requesting side.
Application Status Check	Check if there is any difference between the version of an application cached on the requesting side and the version of the application residing in its original server.
Application Status Check & Update	Check if there is any difference between the version of an application cached on the requesting side and the version of the application residing in its original server, and if there is a difference, update the application cached on the requesting side.
Close session	Close a logical session.

FIG. 20

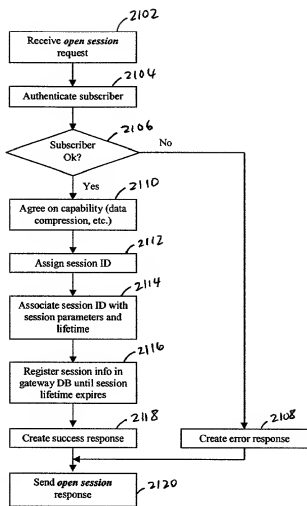


FIG. 21A

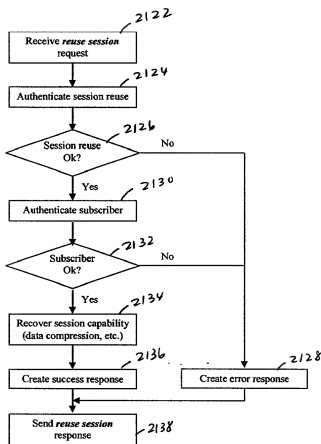


FIG. 21B

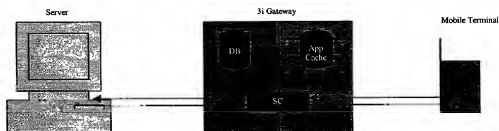


FIG. 22A



FIG. 22B



FIG. 22C

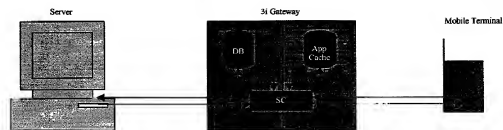


FIG. 22D

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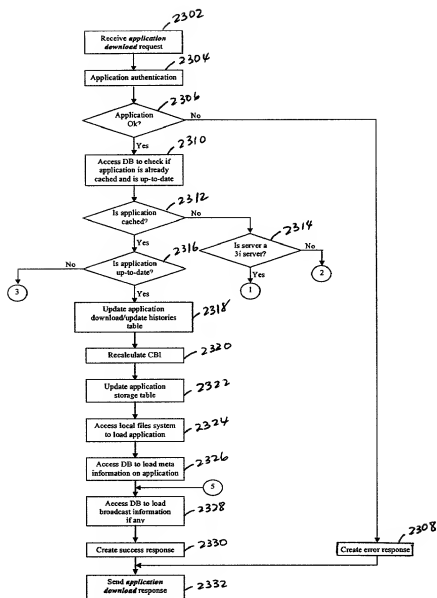


FIG. 23A

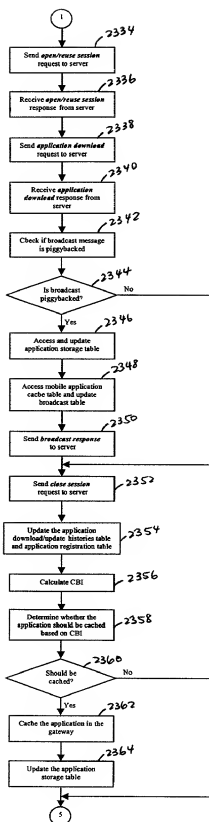


FIG. 23B

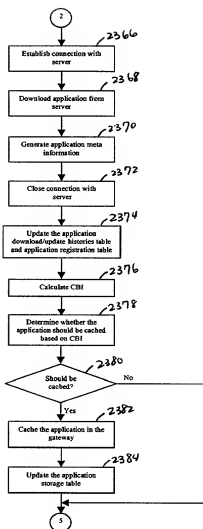


FIG. 23C

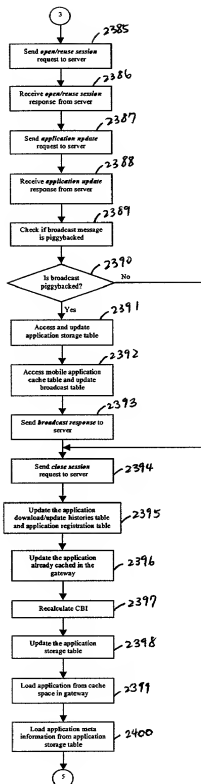


FIG. 23D



FIG. 24A



FIG. 24B

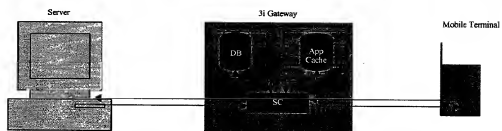


FIG. 24C

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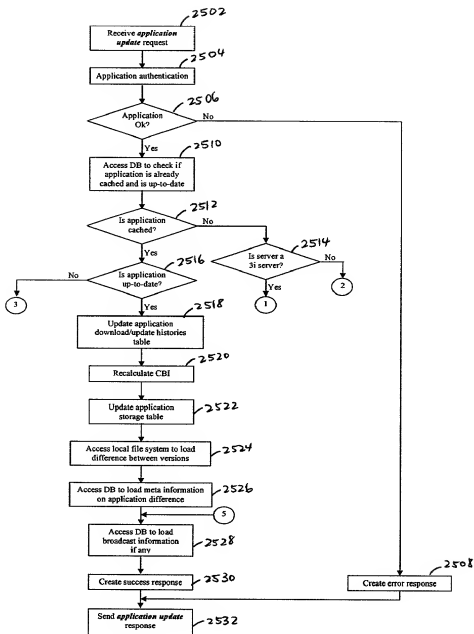


FIG. 25A

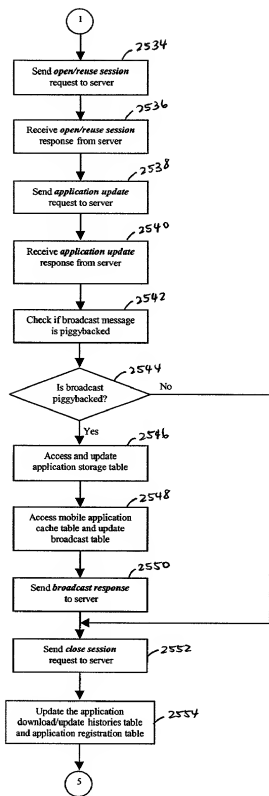


FIG. 25B

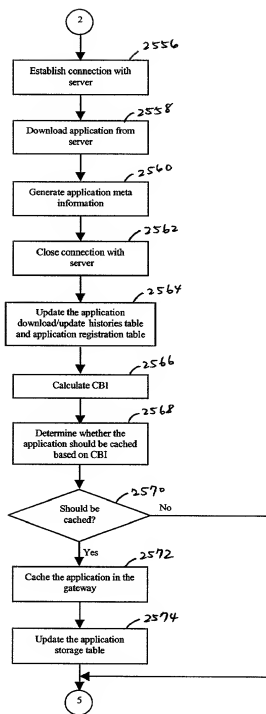


FIG. 25C

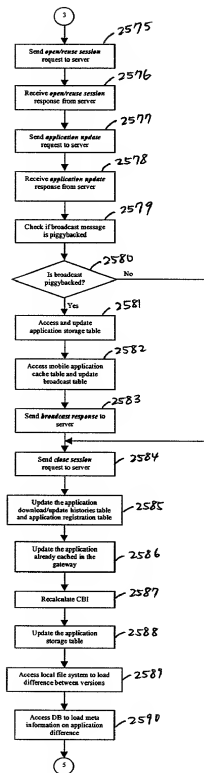


FIG. 25D



FIG. 26A



FIG. 26B

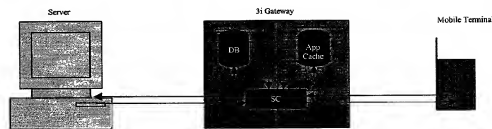


FIG. 26C

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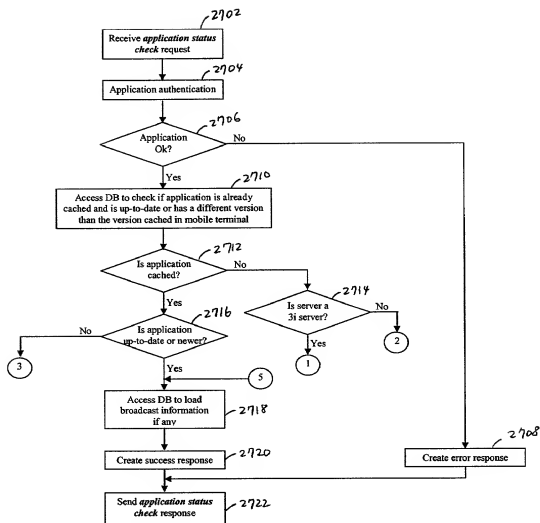


FIG. 27A

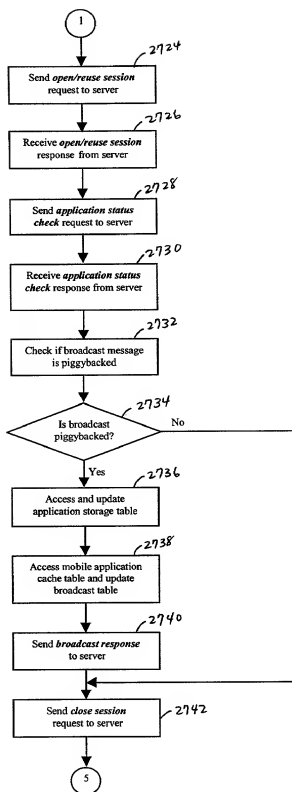


FIG. 27B

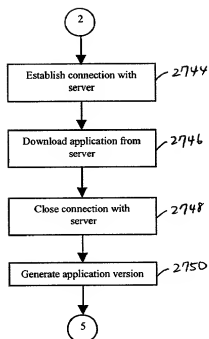


FIG. 27C

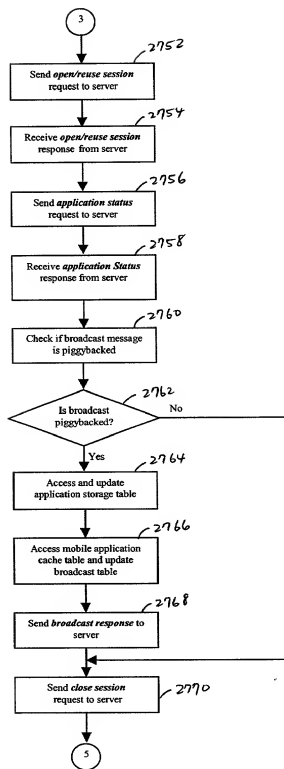


FIG. 27D

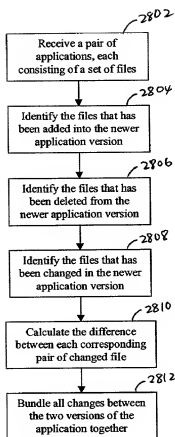


FIG. 28

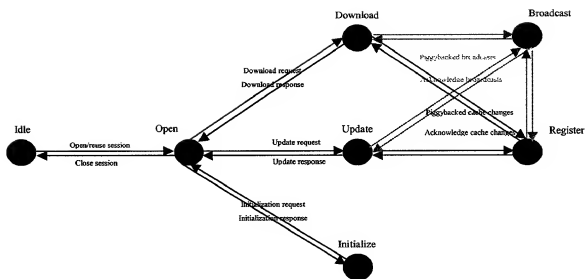


FIG. 29